



Preparing Students to Use Assistive Technology at the Postsecondary Level




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Legislation Behind AT

- **1973-Section 504**
 - Section 504 of the Rehabilitation Act (PL 93-103)
- **1988-Tech Act**
 - Technology-Related Assistance for Individuals with Disabilities Act (PL 101-336)
- **1990-ADA**
 - Americans with Disabilities Act (PL 101-336)
- **1990-IDEA**
 - Individuals with Disabilities Education Act (PL 101-476)
- **1997-IDEA**
 - Reauthorization of IDEA (PL 105-17)
- **Office of Disability Employment Policy**




What's Ahead?

- Skills needed to succeed in college
- Assistive technology to assist with tasks
- Basic toolkit for all students with reading disabilities
- Strategies to explore what is useful




Our Challenge

- Educators and Employers
 - Understand the students/employees
 - Understand the environment
 - Understand the tasks
 - Understand the technology



An Untapped Pool of Talent

- 19 Percent of Americans Have a Disability
- 37% in the Workforce
- More Could Work with Accommodations



Types of Disabilities

- Physical
 - Visible
 - Invisible
- Mental
- Hearing
- Visual
- Learning

Postsecondary Education Tasks

- Reading:
 - Textbooks, handouts, tests, library materials, blackboards, bulletin boards
- Writing:
 - Papers, tests, notetaking
- Listening:
 - Lectures, tutors, social events, friends
- Communicating:
 - Class participation, socialization, connecting with home

Assistive Technology

- "...products, devices, or equipment ... used to maintain, increase or improve the functional capabilities of individuals with disabilities ..."

A photograph showing a person in a wheelchair using a laptop. Another person is standing next to them, possibly assisting or observing. The setting appears to be a classroom or office.

Tasks - continued

- Campus navigation:
 - Building to building, opening doors, multiple floors, cafeteria line, fire drills, lecture halls
- Accessing labs:
 - Computer, science, writing, art
- Special circumstances:
 - Physical education class

AT Provides Individuals

- Opportunity
- Choices
- Access
- Knowledge
- Confidence
- Success

A photograph of a person sitting at a desk, using a computer with a large monitor. The person is wearing a headset, suggesting they might be using a voice-activated system or a communication device.

Assistive Technology Meets the Challenge

- Provides Access to Education
- Breaks Barriers to Employment
- Expands Workforce

AT Prepares Students for Employment

- Confidence
- Knowledge

A photograph of a man and a woman standing together, looking at a computer screen. The man is pointing at the screen, and the woman is looking on. They appear to be in a classroom or office setting.

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AT Benefits Everyone

- Education = Employment
- Employment = A Productive, Taxpaying Citizen

Low to High Tech

- Low Tech**
 - Color overlays
 - Raided line paper
 - Graphic organizers
 - Pencil grips
 - Slant boards
 - Speaking spell checkers
 - Hand held scanners
 - Voice amplifiers
- High tech**
 - Speech recognition
 - Text-to-speech
 - Computer appearance and function
 - Graphic organizers/ outlining software

AT Accommodations

- Voice Output
- Voice Recognition Input
- Braille
- Large Print
- Optical Character Recognition
- Assistive Listening Devices
- Talking Calculator/Math Program
- Books

Assistive Technology Continuum



"No" Tech

Solutions make use of procedures, services, and existing conditions in the environment without the use of devices or equipment.

How AT Is Used



Assistive Technology Continuum



Scan and Read Program
High Tech

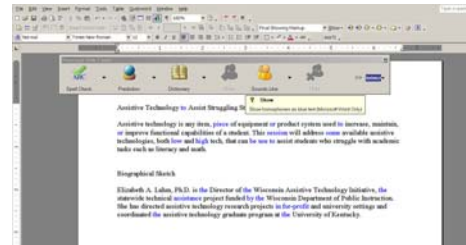
General Assistance



Environmental Adaptations



Writing & Reading Assistance

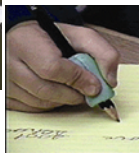


Read & Write Gold

Writing Assistance



Pen Modifications



Special Papers



Reading Assistance



Highlighting Tape



Color Overlays

Writing Assistance

Inspiration
Web and Outline Assistance



Math Assistance



Money Software with
Special Access Overlay



Special Calculator Design

Tools to Access Content

- Magnification
 - Hand-held
 - CCTV technologies
 - Electronic text features
- Amplification
 - Personal and sound field FM systems
- BigShot demo disk

Physical Access to Text

- Page fluffers
- Electronic page turners
- Etext – custom computer access

Maintaining Place, Marking

- Maintaining place
 - Line trackers
 - Human assistants to redirect
- Marking
 - Highlighter tape, sheer sticky notes
 - Etext – highlighting, bookmarking
- WATI reading strips

Spelling

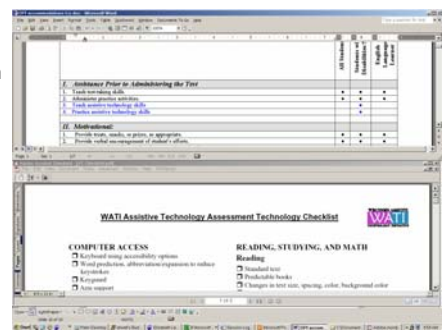
- Word bank desk helpers
- Electronic spelling aids
- Etext – spell checkers, digital dictionaries
- WATI desk helper
- Franklin Spelling Ace

Reading Directions & Content

- Picture/sign supported text
- Handheld scanners
- Etext – Converted or real-time audio files
- Signed video clips
- Polar Bear with pictures
- Text-To-Audio, Acrobat Reader
- WYNN, Kurzweil 3000

Flipping Back and Forth

- Greater issue with Etext
- Tiled windows





Response

- Calculators
 - Desk helpers
 - Standard, talking, large key, coin, abacus
 - Etext – computer-based calculator
- WATI math desk helper



Match Learning Style

- Colors
- Ample workspace
- Fidgets
- Exercise before and during testing
- Frequent breaks
- Reading overlays
- Basketball pen



Maintaining Place

- Human assistant
- Etext – show 1 test item at a time



Timing/Scheduling

- Visual warnings
- Frequent breaks
- TimeTimer
- WatchMinder



Setting

- Background music, white noise, aromas
- Lighting
- Ergonomic work station
- Customized accessible computer station
- Page Up
- Remembrance CD
- Full Spectrum light



Computer Aided Access (CAA)

- Technology Provides:
 - Video Remote Interpreting (VRI)
 - Voice Recognition Notetaking (VRN)
 - Voice Recognition Captioning (VRC)
 - Computerized Notes

● ● ● Video Remote Interpreting

- Student and Interpreter in Different Locations



● ● ● Computerized Notes

- Tablet Technology
- Notes Taken by Hand
- Computer Transfers to Multiple Modalities



● ● ● Voice Recognition Notetaking (VRN)

- Voice Recognition Software
- Captionist Listens to Lecture & Speaks Into Microphone
- Computer Generates Text

● ● ● Randy's Story

- Experience entering school
- Use of assistive technology
- Benefits and barriers

● ● ● Voice Recognition Captioning (VRC)

- Voice Recognition Software
- Computer Recognizes Instructor's Voice
- Lecture Text Appears on Student Laptop
- Editor Proofs Notes Later

● ● ● Instructional Technology for Student Success (ITSS) Project

- Evaluate and identify key strategies related to UDL and improved learning
- Text reader
 - CAST's eReader and TextHelp's Read & Write)
- Screen reader software
 - JAWS
- Scanner with optical character recognition



ITSS Results

Improvement Observed:	All	Elem.	Middle	High
A. Stay on task	67%	71%	70%	58%
B. Work independently	69%	53%	100%	67%
C. Peer interactions	28%	24%	30%	33%
D. Teacher interactions	56%	53%	70%	50%
E. Grades	59%	65%	70%	42%
F. Self-concept	64%	53%	90%	58%
G. Interest in learning	74%	71%	80%	75%
H. Assessments	38%	35%	60%	25%
TOTAL students	39	17	10	12



ITSS Results (continued)

- o 74% of students improved interest in learning
- o 69% improved in ability to work independently
- o 64% improved in self concept
- o 67% improved ability to stay on task
- o 90% improved in self concept

(Kentucky Department of Education, 2001)



Benefits of AT

- o Accommodate people with disabilities
- o Foster independence
- o Allow individuals to fully participate in education, and eventually, in the workforce
- o Expand workforce